

b.n. kirk (natal) cc

Reg. No. CK 1994/015428/23

Water, Sewage & Industrial Effluent Testing Laboratory

45 Eaton Road, Congella, Durban P.O. Box 30140, Mayville, 4058 RSA
 Tel : (031) 205 1245 Fax : (031) 205 6904 E-mail: admin@bnkirk.co.za
 Web Page: www.bnkirk.co.za



CERTIFICATE OF ANALYSIS - BN Kirk (Natal) cc

CLIENT:	ILEMBE DISTRICT MUNICIPALITY	JOB NO:	M21-1
WORKS:	MANDENI WATER TREATMENT WORKS		
ADDRESS:	P.O. Box 1788 Kwadukuza 4450		
ATTENTION:	<i>Mr. H.N. Maphumulo</i>	REPORT DATE:	31-03-2014
eMail:	Group 3 Details	DATE ANALYSED:	26-03-2014
In accordance with the visit schedule and procedure QP21.		DATE RECEIVED:	24-03-2014

ANALYTICAL RESULTS




1	2	3	4		2014												
Determinand	Test Method No	SANS 241-1:2011 Physical, aesthetic, operational, chemical and Microbiological determinands			% Compliance	Date Sampled											
		Risk	Unit	Standard limits ^a		10-01	13-01	23-01	27-01	03-02	10-02	17-02	24-02	07-03	10-03	17-03	24-03

SETTLED WATER

Physical and aesthetic determinands

Determinand	Test Method No	Risk	Unit	Standard limits ^a	10-01	13-01	23-01	27-01	03-02	10-02	17-02	24-02	07-03	10-03	17-03	24-03	
pH at 25°C ^c	P09/042	<i>Operational</i>	<i>pH units</i>						7.6	7.4		not sampled	not sampled	7.5	not sampled	7.6	7.3
Turbidity ^b {A}	P09/045	<i>Operational</i>	<i>NTU</i>						3.9	1.6				7.3		2.6	2.8
		<i>Aesthetic</i>	<i>NTU</i>						3.9	1.6				7.3		2.6	2.8
Conductivity at 25°C	P09/044	<i>Aesthetic</i>	<i>mS/m</i>						12	13				12		13	12

Determinand	Test Method No	SANS 241-1:2011 Physical, aesthetic, operational, chemical and Microbiological determinands			% Compliance	2014												
		Risk	Unit	Standard limits ^a		Date Sampled												
						10-01	13-01	23-01	27-01	03-02	10-02	17-02	24-02	07-03	10-03	17-03	24-03	
FINAL WATER																		
Physical and aesthetic determinands																		
pH at 25°C ^c	P09/042	Operational	pH units	≥ 5 to ≤ 9.7	100%	7.6	7.6	7.5	7.4	7.6	7.6			7.8	7.5	7.6	7.3	
Colour	P09/011	Aesthetic	mg/L Pt-Co	≤ 15	67%				11	10				25	15	14	18	
Turbidity ^b {A}	P09/045	Operational	NTU	≤ 1	0%				3.6	1.3				3.9	2.5	4.0	3.2	
		Aesthetic	NTU	≤ 5	100%				3.6	1.3				3.9	2.5	4.0	3.2	
Conductivity at 25°C	P09/044	Aesthetic	mS/m	≤ 170	100%				12	13				12	12	13	12	
Total Chlorine	P09/025	ns	ns	ns		0.09	0.07	1.12	0.73	0.77	0.59			1.37	1.09	0.94	0.79	
Free chlorine	P09/025	Chronic health	mg/L	≤ 5	100%	0.07	0.02	1.12	0.69	0.62	0.50			1.30	0.90	0.82	0.72	
Monochloramine	P09/025	Chronic health	mg/L	≤ 3	100%	0.02	0.05	0.00	0.04	0.15	0.09			0.04	0.19	0.12	0.07	
Chemical determinands - macro-determinands																		
Nitrate as NO ³	P09/018	Acute health - 1	mg/L	ns		not tested	not tested	not tested	not tested	not tested	not tested	not tested	not tested	5.1	4.4	5.2	4.3	
Nitrate as N ^d	P09/018	Acute health - 1	mg/L	≤ 11	100%	not tested	not tested	not tested	not tested	not tested	not tested	not tested	not tested	1.2	1.0	1.2	1.0	
Nitrite as N ^d	P09/019	Acute health - 1	mg/L	≤ 0.9	100%	not tested	not tested	not tested	not tested	not tested	not tested	not tested	not tested	<0.01	<0.01	<0.01	<0.01	
Chemical determinands - micro-determinands																		
Iron as Fe	P09/014	Chronic health	mg/L	≤ 2	100%				0.21	0.08				0.33	0.18	0.23	0.12	
		Aesthetic	mg/L	≤ 0.3	100%				0.21	0.08				0.33	0.18	0.23	0.12	
Aluminium as Al	P09/053	Operational	mg/L	≤ 0.3	100%	0.10	0.03	nd			0.19			0.19	0.15	0.20	0.16	
^a = The health-related standards are based on the consumption of 2 L of water per day per person of a mass of 60kg over a period of 70 years. ^b = Values in excess of those given in column 4 may negatively impact disinfection. ^c = Low pH values can result in structural problems in the distribution system. ^d = This is equivalent to nitrate at 50mg NO ₃ ⁻ /L and nitrite as 3mg NO ₂ ⁻ /L ^e = Microcystin only needs to be measured where an algal bloom (>20 000 cyanobacteria cells per millilitre) is present in a raw water source. In the absence of algal monitoring, an algal bloom is deemed to occur where the surface water is visibly green in the vicinity of the abstraction, or samples taken have a strong musty odour.																		

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						10-01	13-01	23-01	27-01	03-02	10-02	17-02	24-02	07-03	10-03	17-03	24-03						
MICROBIOLOGICAL RESULTS																							
Heterotrophic plate count ^f	P09/103	<i>Operational</i>	<i>Count per ml</i>	<i>< 1000</i>	100%	13	2	1	0	0	0			0	0	0	396						
Total coliforms ^e	P09/102	<i>Operational</i>	<i>Count per 100ml</i>	<i>< 10</i>	100%	0	0	0	0	0	0			0	0	0	0						
Faecal coliforms ^b {A}	P09/046	<i>Acute health - 1</i>	<i>Count per 100ml</i>	<i>Not detected</i>	100%	0	0	0	0	0	0			0	0	0	0						
E.coli ^a {A}	P09/046	<i>Acute health - 1</i>	<i>Count per 100ml</i>	<i>Not detected</i>	100%	0	0	0	0	0	0			0	0	0	0						
<p>a = Definitive, preferred indicator of faecal pollution.</p> <p>b = Indicator of unacceptable microbial water quality, could be tested instead of E.coli , but is not the preferred indicator of faecal pollution. Also provides information on treatment efficiency and aftergrowth in distribution networks.</p> <p>c = Confirms a risk of human infection and faecal pollution and also provides information on treatment efficiency. The detection of selected viruses confirms faecal pollution of human origin.</p> <p>d = Confirms a risk of infection and faecal pollution and also provides information on treatment efficiency. The detection of selected protozoan parasites confirms a human health risk.</p> <p>e = Indicates potential faecal pollution and provides information on treatment efficiency and aftergrowth.</p> <p>f = Process indicator that provides information on treatment efficiency, aftergrowth in distribution networks and adequacy of disinfectant residuals.</p> <p>g = Process indicator that provides information on treatment efficiency.</p>																							
<i>for and on behalf of B N KIRK (Natal)cc</i>																							
 <hr/> Dawn Bester - Laboratory Manager <i>Technical Signatory</i>						 <hr/> V. Moorthi - Micro. Lab Supervisor <i>Technical Signatory</i>						 <hr/> S. Subban - Chemistry Lab Supervisor <i>Technical Signatory</i>						<hr/> 31-03-2014 <i>Date</i>					
Key: nd = not detected ** = too numerous to count																							
<p>1. While every reasonable precaution is taken in obtaining these results the Company does not accept responsibility for any matters arising from the further use of these results.</p> <p>2. In the case of sample/s submitted by or on behalf of the client, the results expressed in this certificate represent only the sample/s as received.</p> <p>3. This certificate shall not be reproduced except in full, without the written approval of the Company.</p>																							
Accreditation Disclaimer:																							
<p>1. Results marked {A} are included in the SANAS Schedule of accreditation for this laboratory.</p> <p>2. Results marked "Subcontracted Test" in this report, are not included in the SANAS Schedule of accreditation for this laboratory.</p> <p>3. The estimated uncertainty of measurements for the accredited test results is obtainable from the laboratory - QP24 Appendix A.</p> <p>4. The results relate to the sample tested and the most recent methods available with a 95% confidence level.</p>																							

End of Report